

REMARKS

By entry of this Amendment, claims 1, 2 and 21 are the only remaining pending claims.

Information Disclosure Statement

The Examiner has indicated that the Information Disclosure Statement filed on January 17, 2002 fails to comply with the provisions of 37 C.F.R. § 1.97, 1.98 and MPEP § 609 because a list of the references was not provided. Applicants are providing herewith a complete courtesy copy of the Information Disclosure Statement as filed on January 17, 2002, along with the OIPE date-stamped filing receipt indicating that the PTO-1449 was in fact filed with Applicants' original submission. Applicants respectfully request the Examiner to properly consider and return the initialed PTO-1449 for the Information Disclosure Statement filed January 17, 2002 with the next paper from the office.

Drawing Figures

The Examiner is silent as to the status of the replacement drawing sheets filed on March 15, 2007.

§ 112 Rejection

Claims 1-11 are rejected under 35 U.S.C. § 112, second paragraph. Applicants amend claim 1 to remove any ambiguities.

§ 103 Rejections

Claims 1-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly cited Wakao et al. (6,785,145) and Hockaday (6,246,144).

Claims 21 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly cited Wakao et al. (6,785,145) and Ozaki et al. (6,311,936).

Claims 21-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly cited Wakao et al. (5,785,145) and Southall (5,159,222).

Analysis of the Prior Art Rejections

Claim 1 is directed to a brush holder which includes a spring and brush on a brush holder base, a pigtail having one end extending from the brush in a direction of the motor shaft, and a terminal plate which connects to the other end of the pigtail.

Wakao is directed to a motorized power steering device. As illustrated in FIG. 2 and discussed at col. 4, lines 4-24, Wakao discloses a spring 36 and a brush 35 on a brush holder 35. A wire (alleged pigtail) 37 has one end that extends from the brush 35. The other end of the wire 37 is connected to the drive circuit board 22. Wakao features a reduced length for the wire 37 “only due to the featured construction of the illustrated embodiment wherein the drive circuit board 22 is fixed directly on the motor casing 23 and the brush casing 33 is fixed through the insulator 34 on the drive circuit board 22.”

Thus, Wakao fails to teach or suggest a terminal plate connected to a second end of the wire 37 in an area with $\pm 45^\circ$ from the introducing portion toward the radial direction of the brush holder toward an outside of the brush holder.

The Examiner turns to Hockaday for this feature because Hockaday discloses a shunt 34A having one end at the brush and the other end at the uninsulated portion 66A of the lead wire 26A of the terminal 30A.

The Office Action asserts that it would have been obvious to modify Wakao to include the terminal plate and pigtail configuration “to utilize the lead to compress and spring [sic], thus biasing the brush toward the commutator and ensuring contact.”

Since the wire 37 of Wakao must be connected to the drive circuit board 22 which is connected to the control circuit board 38, it would not have been obvious to have the end of the wire 37 connected to a terminal in the manner disclosed in Hockaday.

First, the brush holder 33 has a shape in which the spring is already compressed between the holder and the brush 35, and thus, it would not have been obvious to incorporate an additional structure of Hockaday thereto to compress the spring as this would not accomplish any benefit.

Second, the “reduced length” wire 37 is connected to the bottom side of the circuit board 22 which is fixed to the brush casing through the insulator 34. This circuit board 22 is *specifically* located on the underside of the brush casing so as to be disposed close to, and electrically connected to, the drive circuit casing section 18. Thus, there is no motivation for substituting the vertically constructed terminal in Hockaday in place of the horizontally disposed drive circuit board 22.

Still further, claim 1 has been amended to clarify that the pigtail extends from an upper side of the brush (page 7 and FIG. 4 of originally filed specification). One would not have been motivated to modify Wakao to have this structure because the wire 37 is provided off the bottom of the brush 35 *specifically* so that it can be attached to the drive circuit board 22 disposed below the brush and nearer to the circuit board 38.

Still further, claim 1 has been amended to clarify that the pigtail extends in the direction of the motor shaft and a column extends from the terminal plate and connects with the second end of the pigtail. One would not have been motivated to modify Wakao to have this structure because the second end of the wire 37 is attached to the drive circuit board 22 mentioned above.

Although Hockaday discloses a portion 66A of the lead wire, there is simply no motivation for one to have adopted this drastically different structure to Wakao which utilizes a circuit board under the brush.

For at least all the foregoing reasons, amended claim 1 is patentable.

Claim 2 is patentable for at least the same reasons as claim 1 by virtue of its dependency therefrom.

Turning to claim 21, Wakao fails to have the pigtail extend from the brush along its sliding axis and connect to a terminal plate according to the structure of the claimed invention. Ozaki and Southall have both been cited for disclosing arrangements in which the pigtail extends from the brush along the sliding axis and is connected to a terminal plate.

However, one of ordinary skill in the art would not have been motivated to modify Wakao to have the wire 37 moved from the bottom of the brush to the sliding axis of the brush because the wire 37 is specifically provided to be connected to the circuit board 22 which is disposed below the brush and near the board 38. The proposed modification to Wakao would require a structural overhaul in which a terminal plate is added and the wire 37 is moved in order to achieve the alleged goal of facilitating removal and replacement of the brushes.

In fact, however, the placement of the pigtail and terminal are *not related* to the improved removal and replacement feature in Ozaki and Southall. Rather, it is the novel brush holder plate and brush cap assemblies that facilitate the removal and replacement of the brushes rather than the arrangement of the pigtail. Therefore, one of ordinary skill in the art would not have been motivated to make the alleged structural modifications to Wakao in order to facilitate removal and replacement of the brushes; at most, one would have modified the structure of the motor

casing 23 and holder 33 and the manner in which these are attached to the rest of the housing.

However, there is no motivation for moving the wire 37 from the bottom of the brush or adding a terminal the holder so that the second end of the wire is connected thereto in the structural arrangement recited in claim 21.

In summary, while one may have been motivated to modify the *casing* in Wakao, there is simply no reason one would have moved the wire and added a terminal to the structure in Wakao in order to facilitate removal and replacement of the brush.

Still further, claim 21 has been amended to clarify that a column extends from the terminal plate and connects with the second end of the pigtail, and that the terminal plate and second end of the pigtail connect along the radial direction of the brush.

Again, however, there is no motivation for modifying Wakao to have this structure. As noted above, the easier removal and replacement of the brush is due to the holder plate and brush cap assembly. There is no teaching that the pigtail and terminal plate connection facilitates the removal and replacement of the brush. Thus, this is not proper motivation for modifying the structure of the pigtail and terminal plate in Wakao.

In view of the foregoing, claim 21 is not rendered obvious by the combination of cited references.

Conclusion

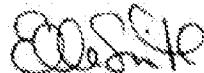
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.116
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Ellen R. Smith
Registration No. 43,042

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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